

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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K. Davis
04-20-98

Applicant: Ingham et al.

Serial No.: 08/____,____

Filed: 20 October 1997

Attorney Docket
No.:

HMV-006.11

Title: *"Vertebrate Tissue Pattern-Inducing Proteins
and Uses Related Thereto"*

Assistant Commissioner for Patents
Washington, D.C. 20231

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I hereby certify that the instant Preliminary Amendment is being deposited with the United States Postal Services as express mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on the date set forth below.

10/20/97

Date of Signature
and Mail Deposit

By: Matthew P. Vincent

Matthew P. Vincent

Preliminary Amendment

Dear Sir:

Prior to examination, please amend the instant application as follows.

In the claims:

42. (new) A purified or recombinant polypeptide fragment of a *hedgehog* protein, which polypeptide modulates a hedgehog activity of the *hedgehog* protein.

43. (new) The polypeptide of claim 42, which polypeptide comprises an amino acid sequence designated in one of SEQ ID No:8, SEQ ID No:9, SEQ ID No:10, SEQ ID No:11, SEQ ID No:12, SEQ ID No:13 or SEQ ID No:14, or a sequence homologous thereto.

44. (new) A nucleic acid encoding a polypeptide fragment of a *hedgehog* protein, which polypeptide modulates a hedgehog activity of the *hedgehog* protein.

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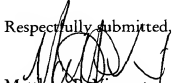
45. (new) The nucleic acid of claim 21, which polypeptide comprises an amino acid sequence identical or homologous to an amino acid sequence designated in one of SEQ ID No:8, SEQ ID No:9, SEQ ID No:10, SEQ ID No:11, SEQ ID No:12, SEQ ID No:13 or SEQ ID No:14.

46. (new) A nucleic acid which encodes a polypeptide that modulates the biological activity of a *hedgehog* protein, which nucleic acid comprises a portion of the nucleotide sequence of the coding region of a gene identical or homologous to a sequence designated by one of SEQ ID No:1-7.

47. (new) A nucleic acid which encodes a polypeptide that modulates the biological activity of a *hedgehog* protein, which nucleic acid comprises a hedgehog-encoding portion that hybridizes under stringent conditions to a portion of the nucleotide sequence designated by one of SEQ ID No:1-7.

48. (new) An isolated and/or recombinantly produced *hedgehog* polypeptide comprising an amino acid sequence at least 80 percent identical with a *hedgehog* amino acid sequence selected from a group consisting of residues 27-425 of SEQ ID No:8, residues 22-396 of SEQ ID No:9, residues 1-336 of SEQ ID No:10, residues 25-437 of SEQ ID No:11, residues 24-418 of SEQ ID No:12, residues 24-475 of SEQ ID No:13, and residues 1-312 of SEQ ID No:14, or an extracellular fragment thereof of at least 150 contiguous amino acids, which polypeptide (i) binds to a *patched* protein, (ii) regulates differentiation of neuronal cells, (iii) regulates survival of differentiated neuronal cells, (iv) regulates proliferation of chondrocytes, (v) regulates proliferation of testicular germ line cells, or (vi) functionally replaces drosopholia hedgehog in transgenic drosophila fly, or a combination thereof.

Respectfully submitted,


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